

CLAIM AMENDMENTS

1-19 (Canceled)

20 (Currently Amended): A method of making a cutting tool insert including a hard substrate and a plurality of coatings, the method comprising:

applying a first coating of at least 2 microns to at least a portion of the substrate, the first coating comprising at least one of a metal carbide, a metal nitride, and a metal carbonitride of a metal selected from the group consisting of zirconium and hafnium; and

applying a second coating, said second coating comprising at least one of a ~~metal carbide~~, metal nitride[[,]] and a metal oxide of a metal selected from groups IIIA, IVB, VB, and VIB of the periodic table.

21 (Original): The method of claim 20, wherein said first coating is at least 2 microns up to 5 microns.

22 (Original): The method of claim 20, further comprising:

applying a third coating, intermediate said first coating and said second coating and in contact with said second coating, said third coating of a metal carbonitride 2 to 6 microns thick.

23 (New): The method of claim 22, wherein said metal carbonitride of said third coating has a nitrogen to carbon atomic ratio between 0.7 and 0.95 which causes said metal carbonitride of said third coating to form projections into said second coating to thereby improve adherence and crater resistance of said second coating.

24 (New): The method of claim 20, wherein said first coating is selected from the group consisting of zirconium nitride and hafnium nitride; and said second coating is selected from the group consisting of aluminum oxide and titanium nitride and is 1 to 10 microns thick.

25 (New): The method of claim 20, wherein said plurality of coatings further comprises applying a fourth coating comprising titanium nitride overlaying the second coating, said fourth coating having a thickness of at least 1 micron.

26 (New): A method of making a cutting tool insert including a hard substrate and a plurality of coatings, the method comprising:

applying a first coating comprising hafnium nitride to at least a portion of the substrate, said first coating having a thickness ranging from 2 to 5 microns;

applying a second coating comprising aluminum oxide, said second coating having a thickness ranging from 1 to 10 microns; and

applying a third coating comprising titanium carbonitride, said third coating having a thickness ranging from 2 to 6 microns.

27 (New): The method of claim 26 wherein the third coating is applied after applying the first coating and prior to applying the second coating.

28 (New): The method of claim 27 wherein the titanium carbonitride of the third coating has a nitrogen to carbon atomic ratio between 0.7 and 0.95 which causes the titanium carbonitride of the third coating to form projections into the second coating to thereby improve adherence and crater resistance of the second coating.

29 (New): The method of claim 27 wherein said plurality of coatings further comprises applying a fourth coating comprising titanium nitride overlaying the second coating, said fourth coating having a thickness of at least 1 micron.

30 (New): A method of making a cutting tool insert including a hard substrate and a plurality of coatings, the method comprising:

depositing an inner layer on at least a portion of the substrate, the inner layer comprising at least one of a metal carbide, a metal nitride, and a metal carbonitride of a metal selected from the group consisting of zirconium and hafnium;

depositing a reinforcing layer adjacent the inner layer, the reinforcing layer comprising a metal carbonitride having a nitrogen to carbon atomic ratio between 0.7 and 0.95 as determined by x-ray diffraction and wherein the reinforcing layer comprises a plurality of projections; and

depositing a wear-resistant layer adjacent the reinforcing layer, the wear-resistant layer comprising a ceramic, wherein the plurality of projections of the reinforcing layer project into the wear-resistant layer.

31 (New): The method of claim 30 wherein the metal carbonitride of the reinforcing layer is a metal carbonitride of a metal selected from groups IIIA, IVB, VB, and VIB of the periodic table.

32 (New): The method of claim 30, wherein the inner layer comprises hafnium nitride, the reinforcing layer comprises titanium carbonitride, and the wear-resistant layer comprises aluminum oxide.

33 (New): The method of claim 30 wherein the inner layer is 2 to 5 microns thick; the reinforcing layer is 2 to 4 microns thick, and the wear-resistant layer is 1 to 10 microns thick.

34 (New): The method of claim 33 further comprising depositing a fourth layer over the wear-resistant layer, the fourth layer having a thickness of 1 up to 4 microns and comprising at least one of titanium nitride and titanium carbide.

35 (New): The method of claim 34 wherein the reinforcing layer is about 3 microns thick, the wear-resistant layer is about 6 microns thick, and the fourth layer is about 2 microns thick.